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Information Systems' Contribution to Firm Performance: Impacts of Information Systems Strategy and IS Maturity

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Abstract
The evolution of information systems (IS) into a more strategic tool in organizations from its traditional role of a business support has taken root in the last decade. For many, the level of sophistication/maturity of the enterprise-IS is key to delivering competitive advantage or efficiency gains towards firm performance. As such, the adoption and implementation of appropriate IS Strategy is imperative to setting the path for the effective utilization and management of the enterprises-IS to deliver the desired outcome. But what strategies underpin the implementation of the enterprises-IS agenda and how do these influence the level of the enterprise-IS Maturity and its contribution to overall firm performance? The study adopts a quantitative design and cross-sectional approach with survey responses from IT executives of Ghana Club 100 organizations in Accra to examine this phenomenon. Results suggest that although defined IS Strategy positively impacts enterprise-IS Maturity and leads to greater contribution of IS to firm performance, IS Innovator strategy yields greater impact than IS Conservative strategy Whereas IS Undefined strategy is detrimental to enterprises-IS Maturity. Further, the surveyed organizations exhibit "stage disparity" recording different stage scores for the enterprise-IS growth processes. It is imperative, therefore, that organizations not only develop definitive IS Strategy to guide the enterprise-IS agenda, but be consistent in their implementation towards improved firm performance and sustainability.
Keywords: IS Strategy, IT Maturity, Performance, Enterprise-IS, Stage Disparity

1. Introduction

The evolution of IS/IT into a more strategic position in the organization from its traditional role of a support function has taken root in the past decade. Increasingly, organizations are adopting information systems and related technology to drive business goal and improve efficiency of their operations. However, there still exists the vagueness in the significant impact of such IS/IT investments on firm performance leading to the acclaimed "productivity paradox" cited in many instances (Chen et al, 2010; Brynjolfsson & Hitt, 1993). For Alshawi (2007), the limitation of the financial measures, is the reason for the financial models' inability to present the actual contribution of IS/IT to the overall firm performance.

Noting that the performance of an organization is somewhat hinged on its ability to formulate and implement the appropriate strategies suitable in the current environment, an appropriate IS Strategy is essential to set the organizational path for the implementation of the enterprise-IS agenda for increased productivity and firm performance. Collectively, IS Strategy seeks to define the organizational perspective on the investment in, deployment, use and management of information technology (Chen et al., 2010). However, despite extensive research in the IS domain, focus has been on the three dominant streams of IS planning process, strategic business-IS alignment and IS for competitive advantage to the neglect of IS Strategy itself (Chen et al., 2010; Lo, 2012).

Using ICT has been reported to yield benefits to organizations including enhanced market share of products, innovative product portfolio, improved services, accelerated response to market stimuli with reduced inefficiency in using capital and labour leading to higher growth margins and productivity gains (Pilat, 2003). The increasing adoption and use of IT/IS in the organization, particularly in Ghana gives impetus to access and ascertain the overall state of the enterprise-IS within defined growth processes (Li et al., 1994; Hollyhead & Robson, 2012). Knowledge of the growth stages provide a basis from which to develop appropriate strategies, adopt effective management styles, exert control and manage investment levels across deployments (Nolan & Koot, 1992; Hollyhead & Robson, 2012).

Noting that firm performance is influenced by the level of sophistication of the business process alignment and IS integration (Teo & King, 1999; Chen et al., 2010), it is prudent to investigate the level of utilization and management of enterprise-IS in organizations in Ghana with regards to the dominant strategies underpinning their enterprise-IS agenda. The study thus investigates the IS Strategies pursued by firms, analyze their relation

and impacts on enterprise-IS maturity and ultimately their influence on the contribution of enterprise-IS to the overall firm performance and sustainability with emphasis on Ghana.

2. Literature Review: Concepts and Previous Studies

2.1. ICT in Ghana

In many countries, the increasing significance of IT/IS in organizations has given impetus to seek ways to harness the strategic benefits prescribed by this technology resource towards improving firm performance and organization sustainability. As noted by Pilat (2003), the rapid diffusion and use of internet, mobile telephony, broadband network, software packages, business intelligence etc. are all evidence of this pervasive nature of ICT in organizations and world today. He further asserts that countries with higher diffusion and usage of ICT benefit more from the impact it brings and advocates that, to promote the adoption, usage and exploitation of this technology resource, it is essential for governments to reduce cost and regulation hurdles to create enabling environment for firms to invest in ICT.

Recognizing the potential of ICT to drive economic growth and sustainability, the Government of Ghana (GoG) introduced the Information and Communication for Accelerated Development (ICT4AD) policy as well the complimenting agencies of Ghana Investment Fund for Electronic Commerce (GIFEC) and National Information Technology Authority (NITA) to coordinate and ensure policies pertaining to ICT are effectively implemented. At the firm level, many organizations in Ghana have invested in, deployed and used IT/IS extensively over the years to enhance operational efficiency and improve productivity but the true contribution of these investments in the enterprise-IS to firm performance still remains elusive. ICT, as noted by Pilat (2003) is no panacea for firm performance but for the complementary investments leveraging resources, adopting organizational setups and user skills as well as appropriate management culture would determine how well organizations can harness IT/IS for strategic benefits. It is imperative, therefore, to investigate the strategies and approaches adopted in organization in Ghana to implement the enterprise-IS for improved firm performance.

2.2. IS Strategy: Typology and Operationalization

Strategy is mainly the perspective adopted by an organization to implementing or pursuing its set objective and goals, thus, to effectively pursue the enterprise-IS agenda, the IS Strategy cannot be ignored (Chen *et al*., 2010; Lo, 2012). Noting the little attention to IS Strategy in extant literature in the IS domain, Chen et al. (2010) re-conceptualized and defined typology for IS Strategy as either defined (IS Innovator and IS Conservative) or undefined (IS Undefined). A fourth typology, ambidextrous, was found dominant in organizations in further studies by Lo (2012) and Leidner, Lo and Gonzalez (2010).

The IS Innovator Strategy is considered an organizational perspective that continually endeavors to be innovative through new initiatives i.e. exploring, experimenting with new and uncertain alternatives (Chen et al., 2010, Lo, 2012). For example, by launching its lending library for its kindle device, Amazon, according to Lo (2012) in an example of IS Innovator in its industry capitalizing on the e-book market to create a competitive edge for the kindle device over other industry players. The IS Conservative Strategy is considered the organizational perspective that seeks to create value through efficiency by carefully scrutinizing and improving IS practices and related technologies i.e. by exploiting the potential of IS with reduced risk approach to adopting initiatives (Chen et al., 2010; Lo 2012, Leidner et al., 2010). Lastly, the IS Undefined Strategy is one that does not have a clearly well-articulated long term goals regarding the exploitation or exploration of IS for strategic purposes in the organization.

Leidner et al. (2010), Leidner et al. (2011) and Lo (2012) adopted and with modification, fully operationalized all types of IS Strategy typology and reported their agreement to assertions by Chen et al. (2010) of the three types of IS Strategy. Lo (2012) notes the existence of a fourth typology- IS Ambidextrous- where behavior towards IS Strategy is blend of exploitative and explorative tendencies and approaches, saying “perhaps, the ambidextrous IS Strategy, which is a combination of innovative and conservative strategies exists in large percentages than initially thought (Lo, 2012, p.19). Another, emergent strategy from her work is termed “follow the economic cycle” strategy - where despite having a clearly articulated and formal IS Strategy, organizations exhibit inconsistent behavior towards the investment in, deployment, use and management of the enterprise-IS. Despite these, Lo (2012) believes that the IS Strategy typology “grounded in the exploitative-explorative capability framework” provides “a parsimonious representation” of distinct IS Strategies. The study considers this the thrust from which to advance this research on IS Strategy grounded in the IS Strategy typology postulated and operationalized by Chen et al. (2010).

2.3. IT Maturity - The Enterprise-IS and Stages-of-Growth Model

The increasing adoption and use of IT/IS in organizations makes it necessary to assess and ascertain overall status of the enterprise-IS within defined growth processes (Li et al, 1994; Hollyhead & Robson, 2012) in order to effectively gain the most from it. In the simplest conception, "maturity" could be deemed fully developed to the desired stage where "maturity stage" deemed the succession of changes that affect an entity (e.g. species, industry; society) according to Solli-Saether and Gottschalk (2010). Hence, a stages-of-growth model has clearly defined stages of maturity of an organization's use and management and planning of its IT/IS (Galliers & Sunderland, 1991).

The concept of IT Maturity has been around since Richard Nolan proposed his stages-of-growth theory (Gibson & Nolan, 1974; Hollyhead & Robson, 2012). Further, Hollyhead and Robson (2012) indicate that though modified over time and subject to constraints in some quarters, it is still used to discuss the growth of IT within organizations and used by many companies and consultants to categorize evolution of what was originally known as the Data Processing (DP) department" (p.1). Although other models exist, as noted by Alshawi (2007) and Galliers & Sunderland (1991), Gottschalk (2002) reports that Nolan's model takes a more holistic view and approach to IT evolution in organizations. The study thus uses Nolan's stages-of-growth model to assess the enterprise-IS Maturity in Ghanaian organizations with the four growth processes of applications portfolio, management, resources and user skills/awareness (Nolan & Koot, 1992) to unravel the influence of IS Strategy on the enterprise-IS sophistication.

3. Theoretical Framework

The study concurs with Chen et al. (2010) and adopts their definition of IS Strategy as the "organizational perspective on the investment in, deployment, use and management of information systems" (p.237) to advance the current research pertaining to IS Strategy in organizations in Ghana. Further, to ascertain the enterprise-IS sophistication or maturity, the study adapted a working definition of IT Maturity as "the organizational growth with the utilization and approaches adopted in the planning and management of the enterprise -IT/IS" from Galliers and Sunderland (1991). It is clear both definitions are at the organizational level and related, in that the utilization, planning and management of the enterprise-IS is largely dependent somewhat on the organizational perspective to invest in, deploy and use of IS in the organization. It is in view of the above that the study contends that the choice of particular IS Strategy determines the level of utilization and management of enterprise-IS and the subsequent contribution to firm performance.

3.1 IS Strategy and Enterprise-IS Maturity

The primary goal of the IS Innovator Strategy is to be the IS leader in its industry thus aims to be first to react to opportunities in which it could discover and make the most of IS innovation to gain business value. The core of this strategy however, is not to always be first in launching and implementing new technology, but rather a strategic perspective to consistently identify and explore new ways to create value for the firm (Chen et al., 2010; Lo, 2012). On the other hand, the core of the IS Conservative Strategy is process efficiency and cost reduction with the general perspective towards stable and careful exploitation of IS strategically.

From the foregoing, it is noted that the rationale for both strategies is improving the effectiveness and efficiency of the enterprise-IS, hence, the study posits that:

i. *H1a: Defined IS Strategy relates positively to enterprise-IS Maturity.*

Further, due to the more aggressive nature of IS Innovator Strategy towards reaping strategic benefits from enterprise-IS than IS Conservative Strategy, the study posits that:

ii. *H1b: IS Innovator Strategy is more positively related to enterprise-IS Maturity than IS Conservative Strategy.*

Not least, by viewing the enterprise-IS more as an afterthought, IS Undefined organizations do not exhibit consistent behavior with regards to the investment in, deployment, use and management of enterprise-IS with no articulated long term goals regarding the utilization and management of the enterprise-IS in the organization, hence:

iii. *H1c: IS Undefined is negatively related to enterprise-IS Maturity.*

3.2 The Enterprise-IS Maturity and Firm Performance

Drawing on the stages-of-growth perspective, we seek to explain/analyze the impact of enterprise-IS on the overall firm performance with recognition for the levels of maturity. Noting that higher levels of enterprise-IS Maturity would enable organizations to create and sustain competition advantage translating into performance

gains, we posit that:

iv. *H2a: enterprise-IS Maturity is positively related to firm performance.*

3.3 IS Contribution to Firm Performance

The study contends IS Strategy in itself does not impact firm performance, but by pursuing a particular IS Strategy, organizations adopt peculiar approaches to implementing the enterprise-IS yielding varied levels of utilization and management (maturity) which invariably influences the overall contribution of the enterprise-IS to firm performance. Hence, we posit that:

v. *H3a: IS Strategy influences IS contribution to firm performance via enterprise-IS Maturity.*

4. Methodology

4.1 Research Design

The study adopts the cross-sectional survey design which according to Owens (2002) enables data to be gathered about a population at a single point in time from a representative sample ensuring that the same data is collected from the respondents and gives an unbiased representation of the population of interest. The survey approach was used, administering questionnaires to top IT executives of organizations in the study sample. The variables were modeled as reflective constructs with measures either adopted or adapted from prior studies (Chen et al., 2010; Lo, 2012; Li et al., 1994) thus making their reliability and validity proven and tested.

4.2 Target Population, Sample and Sampling Technique

The study population was corporate organizations in Ghana. Collectively making up the private sector, they operate in a wide spectrum of sectors. The target for this study is the Ghana Club 100 companies. The Ghana Club 100 (GC100) is an annual compilation of the top 100 companies in Ghana by the Ghana Investment Promotion Centre (GIPC) encompassing a wide range of sectors – agriculture and agribusiness, education, financial services, ICT, manufacturing, petroleum and mining services, services and health. The study used purposive sampling technique where the researcher arbitrarily selects a sample considered relevant for the study and believed to be as typical and representative as the population (Haque, n.d.). The GC 100 companies (total of 62 in the Accra metropolis) purposively selected for the study is typical of corporate organizations in Ghana and comprises organizations from varied sectors or industries. As such, it provides a single point to investigate the IS Strategies pursued by firms, analyze their relation and impacts on enterprise-IS Maturity and ultimately their influence on the contribution of enterprise-IS to the overall firm performance and sustainability in Ghana.

4.3 Response Rate

The survey comprised only such organizations located within the Accra metropolis, thereby, reducing the number of sampled organizations to sixty-two (62). Questionnaires were administered to these organizations and a total of forty-four (44) responses were received representing a response rate of 70.97%. All 44 responses were used in the analysis as they were deemed to be valid with missing data within acceptable ranges. It is noted that with respondents being the highest ranking or senior IT executives (79.5%) the respondents provide a good representation of the target sample for the study

4.4 Framework of Data Analysis

The Partial Least Squares (PLS) approach was used to analyze the research model. The choice of this approach is rooted in the ability of PLS to maximize explained variance prediction of the constructs (Hair, Black, Babin & Anderson, 2009), consistent with the objective of the study. PLS is also suitable for small samples - 30 to 60 and more flexible for complex problems (Hair *et al*., 2009). The guidelines and rules for preparing data for analysis: missing data, outliers and assumptions for multivariate analysis recommended by Hair *et al*. (2009) were followed. Further, mediation test using the sobel test calculations (Lo, 2012) were used to ascertain link between IS Strategy and firm performance via the enterprise-IS Maturity. Post-hoc analysis was also carried out to unravel some pertinent issues relating to the study.

5. Results of Data Analysis

5.1 Data Validations

Composite Reliability (CR) and Average Variance Extracted (AVE) were used to validate the reliability and convergence of the reflective measures in the PLS structural model (Chin, 1998). Composite Reliability (CR) measures were greater than 0.70 providing support for internal consistency and Average Variance Extracted (AVE) for each factor was greater than the 0.50, indicating acceptable reliability and convergent reliability. Further, discriminate validity for the reflective measures was validated in two ways: square root of the AVE for each factor was higher than the correlation with other factors indicating each factor shares higher variance with items in its own factor than with items in other factors whereas cross-loadings of items load higher on its own

construct than on other constructs (Chin, 1998). The descriptive statistics for the constructs are presented in Table 1 below as well as validations in Tables 2 and 3.

Table 1: Descriptive Statistics

Construct	Min	Max	Mean	Std Dev
IS Innovator	1	5	3.67	1.00
IS Conservative	2	5	4.06	0.70
IS Undefined	1	5	2.50	1.16
Enterprise-IS Maturity	1	3	2.30	0.74
IS Contribution to Performance	1	5	3.80	0.99

Table 2: Measurement Validations

Construct	Composite Reliability	AVE
IS Innovator	0.86	0.68
IS Conservative	0.82	0.60
IS Undefined	0.96	0.88
Enterprise-IS Maturity	0.86	0.61
IS Contribution to Firm Performance	0.92	0.62

Table 3: Additional Validations and Correlations for Constructs

Construct	ISInnov	ISConsv	ISUndf	Entp-ISMat	ISPerf
ISInnov	1				
ISConsv	0.57833	1			
ISUndf	-0.20557	-0.467142	1		
Entp-ISMat	0.06201	0.302969	-0.634888	1	
ISPerf	0.43728	0.585161	-0.72097	0.534897	1

5.2 Research Model Results

To test the significance and validity of the research model, the PLS algorithm was run for the PLS structural model. Results for the overall model and mediation tests are depicted below in Figure 1 and Table 4.

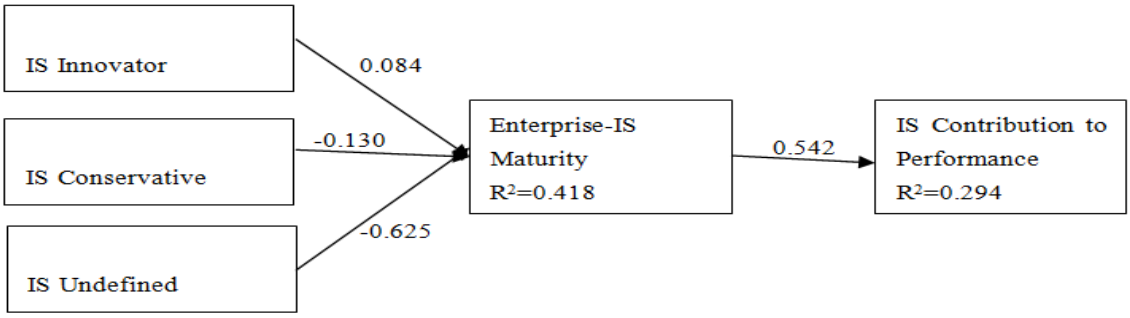

Figure 1: Overall Research Model Results

Table 4. Mediation Test Results (with enterprise-IS Maturity as mediator)

Mediating Relationship	Sobel t-statistic	Sobel p-value	VAF	Interpretation
IS Innov ⇨ Entp-IS Mat ⇨ Perf	2.608	0.009	0.191	Partial mediation
IS Consv ⇨ Entp-IS Mat ⇨ Perf	3.500	0.005	0.544	Full mediation
IS Undf ⇨ Entp-IS Mat ⇨ Perf	1.066	0.289	0.10	No mediation

Table 5. Summary of Hypothesis Results

Hypothesis	Result
H1a: Defined IS Strategy relates positively to enterprise-IS Maturity.	Partial Support
H1b: IS Innovator relates more to enterprise-IS Maturity than IS Conservative	Supported
H1c: IS Undefined relates negatively to enterprise-IS Maturity.	Supported
H2a: Enterprise-IS Maturity relates positively to Firm Performance.	Supported
H3a: IS Strategy influences IS contribution to Firm Performance via enterprise-IS Maturity.	Partial Support

5.3 Post-hoc Analysis

To further confirm overall validity of the research model, we analyzed model calculations using organizations with stable IS Strategy implemented for 2/more years (n=27). Results remained stable and further supported the original hypothesis depicted in Figure 2 below.

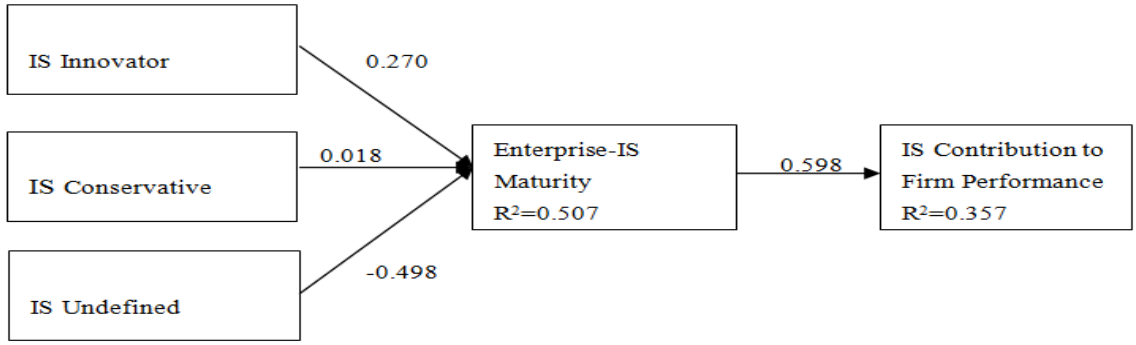

Figure 2: Model Results for organizations with 2/more years stable IS Strategy

The study was interested also in finding out if organizations in Ghana pursued ambidextrous IS Strategy as noted by Lo (2012). The results as indicated in Table 6 below confirm that more organizations surveyed exhibited ambidexterity in their approach to the enterprise-IS. This suggests that organizations are effectively combining both innovative and conservative approaches to the enterprise-IS in order to be competitive while maintaining high level efficiency of operations for improved sustainability.

Table 6. Extended IS Strategy Typology

IS Strategy	Count	% of sample	Mean	Std. Dev
IS Innovator	7	15.90%	4.38	0.40
IS Conservative	15	34.10%	3.98	0.44
IS Undefined	6	13.60%	4.44	0.46
IS Ambidextrous	16	36.40%	4.38	0.30

The study also sought to ascertain the levels of maturity of the enterprise-IS in the surveyed organizations with results depicted in Table 4.7 below. Using the three-eras of enterprise-IS evolution (Nolan & Koot, 1992; van der Heer, n.d.), results reveal that more organizations have medium (IT Era – 45.50% to high (Network Era – 47.70%) enterprise-IS maturity levels than low (DP Era – 6.80%).

Table 7. Enterprise-IS Maturity Levels

Maturity Level	Count	% of Sample	Mean	Std. Dev
Data Processing Era	3	6.80%	1.17	0.39
Information Technology Era	20	45.50%	1.93	0.61
Network Era	21	47.70%	2.82	0.44

6. Discussion of Findings

6.1 Summary of Major Findings

i. The study found that defined IS strategies (IS Innovator and IS Conservative) translate into higher levels of enterprise-IS Maturity and with a resultant positive influence on IS Contribution to overall Firm Performance than IS Undefined strategy. Further, the stable and consistent implementation of IS Strategy is imperative to attaining meaningful results with regards to enterprise-IS Maturity as was established with IS Conservative strategy (which proved negative to IT Maturity with β =-0.130 in the original model improving to β=0.018 in the post-hoc analysis for organizations with stable strategy of 2/more years). This reveals the influence of IS strategy on the level of utilization and management of organizational IT/IS resource and the related impacts.

ii. The study found the dominance of a fourth IS strategy - IS Ambidextrous - where organizations adopt both innovative (exploitative) and conservative (explorative) approaches to IS strategy. This indicates that organizations are devising measures to be competitive while operating as efficiently as possible by incorporating both innovative and conservative strategies to propel and execute the enterprise-IS agenda. This reveals that not only are organizations in Ghana adopting the traditional typology of IS strategy but rather adopting a blend approach to the enterprise-IS for improving competitive edge and efficiency.

iii. More so, it is noted that organizations have moved from the Data Processing Era (3.6%) into higher levels of enterprise-IS Maturity; Information Technology Era (21%) and the Network Era (41%). However, organizations exhibit stage disparity where the organizational stage scores for growth processes are not uniform. This reveals that organizations do not pay great attention to all growth processes of the enterprise-IS for uniform maturity in order to reap the full potential it presents. It is imperative, therefore, that the growth processes of application portfolio; resources; management and user awareness/skills are appropriately considered in implementing the enterprise-IS agenda.

iv. Not least, the study found that enterprise-IS Maturity establishes link between IS strategy and firm performance translating the influence of defined IS strategies on the enterprise-IS indirectly onto firm performance. By empirically establishing full and partial mediation for defined IS strategy, implies defined IS strategies translate into systematic and progressive improvements in the organizational maturity levels with regards to the utilization and management of the enterprise-IS resulting in greater contribution of the IS to firm performance.

6.2 IS Strategy and enterprise-IS Maturity

By formulating and adopting definitive IS strategies, the study contends that defined IS strategies would systematically pursue improvement in the utilization and management of IT/IS leading to higher levels of enterprise-IS Maturity (H2a). The level of the stages-of-growth with regards to IT/IS in the organizations is however, dependent on whether the organization takes a business support or business push role of the enterprise-IS. As such, the study contends that although IS defined strategies relate positively to enterprise-IS Maturity, the IS Innovator strategy tends to exhibit higher relations (H2b). It is noted that in the original research model, IS Innovator yielded a path coefficient of β=0.084 to IT Maturity which although positive, is very weak as depicted in Figure 1. Intriguingly, IS conservative showed a negative relation to IT Maturity which was weak in magnitude (β =-.130). Thus, in the original model, only IS Innovator shows positive correlation to enterprise-IS with IS Conservative strategy being negative, thereby, supporting the original hypothesis partially. However, the post-hoc analysis reveals that for organizations with stable implementation of IS strategy for 2/more years, defined IS Strategy (IS Innovator and IS Conservative) both correlate positively to enterprise-IS Maturity, thus supporting the actual hypothesis. This is indicate that enterprise-IS maturity is not attained by just adopting a particular defined IS strategy, but rather the stable and consistent implementation of such strategy

This lends support to the fact that enterprise-IS Maturity is influenced by pursuing a particular IS strategy. Results reveal that to attain higher maturity with regards to enterprise-IS, depends on pursuing defined IS strategy and even that, IS Innovator strategy yields higher levels of maturity than IS Conservative strategy.

This is consistent with Lo's (2012) observation that organizations gain more value by introducing radical innovation (associated with IS Innovator) with respect to IT/IS than adopting standardized off-the-shelf applications (associated with IS Conservative). Further, the IS Innovator is more proactive to improving the utilization and management of the enterprise IT/IS to leverage opportunities presented and does not relent in ceasing investment opportunities for business improvement (Lo, 2012; Chen et al., 2010).

Undefined IS strategy was postulated to exhibit negative relationship to enterprise-IS Maturity (H2c). The findings support this with high path coefficients (beta weights) of β=-0.625 indicating that organizations with undefined strategies not only exhibit low enterprise-IS Maturity but rather retrogressive levels of maturity. These are often characterized by disparate levels in the growth processes of the enterprise-IS Maturity. For instance, an organization with undefined approach towards IS utilization could exhibit a high application portfolio but lacks the user awareness/skills necessary to effectively and efficiently implement the systems for the desired gains. This Voyer (n.d) captures as "however high the quality of the hardware or the software, if the employee does not use it, or if the organizational context dos not encourage it, or if the wok is not adjusted to take advantage of the possibilities, the result would be failure".

6.3 Enterprise-IS Maturity and Firm Performance

Overall, results suggest that enterprise-IS Maturity positively correlates to firm performance explaining over 29% and 35% of the variance with path coefficients of β=0.542 and β=0.598 respectively in the original research model and post-hoc analysis (for organizations with stable IS Strategy for 2/more years). As such, defined IS strategies which translate into higher levels of enterprise-IS Maturity results subsequently in improved firm performance accordingly. With clear strategies on how to pursue IT/IS for organizational value, organizations tend to pay particular attention to the key factors noted as growth processes (Nolan & Koot, 1992). The undefined organizations simply are selective in their approach to the utilization and management of their organizational IT, thus misses the point in generating optimum value for firm performance.

Post-hoc analysis reveals that majority of the surveyed organizations (93.22%) exhibit moderate (Information Technology Era) to high (Network Era) levels of enterprise-IS Maturity with only 6.8% falling within the low level (Data Processing Era). However, "stage disparity" a situation where organizations exhibit different stage scores for the assessed growth processes (Drury, 1984; Nolan & Koot, 1992; Hollyhead & Robson, 2012) is apparent in most organizations. This phenomenon limits gains derived from the enterprise-IS and as Drury (1984) suggests, the individual ratings provide information to ascertain the true level of the enterprise-IS and to take measures in addressing the shortfalls. For this, Li et al. (1994) and Hollyheadd and Robson (2012) suggest organizations devote more resources towards the lowest ranking growth processes (benchmarks) to bring them up to the level of the others for uniformity.

6.4 IS Contribution to Firm Performance

The study contended that IS strategies do not in themselves lead to contribution to performance, but rather through the extent of utilization and management of the organizational IS/IT – enterprise-IS Maturity (H3a). This in turn provides an enabling environment and platform to implement IT/IS services towards business improvement and attainment of business goals, the resultant of which is improved contribution of IS to organizational performance. The study found empirical support for this through mediation tests (please see Table 4). It is noted that enterprise-IS Maturity either fully or at least partially mediated between firm performance and defined IS strategies but exhibited no mediation for undefined strategy. The full mediation established through enterprise-IS Maturity for IS Conservative was characterized by a VAF (value extracted for) value of 54% indicating that over half the total effect of IS Conservative strategy on performance is explained by its indirect effect through enterprise-IS Maturity.

The results further suggest that the stable and consistent implementation and strategy is imperative to attaining greater impact on firm performance. For instance, the correlation between IS Conservative Strategy and enterprise-IS Maturity improved from β=-0.130 to β=0.018 in stable IS strategy implementing organizations which is indicative that the ability of IS Conservative Strategy to improve level of enterprise-IS Maturity and the resultant influence of firm performance is dependent on stable and consistent strategy implementation. Enterprise-IS Maturity did not mediate between IS Undefined strategy and firm performance indicating that the un-uniform style of IS Undefined cannot translate into progressive definitive levels of maturity and subsequently firm performance.

Overall, the stages-of-growth (enterprise-IS Maturity) perspective adopted in the study is supported by the research model. As indicated earlier, the perspective posited that organizations evolve in their utilization and management of IT/IS (Galliers & Sunderland, 1991; Nolan & Koot, 1992; Hollyhead & Robson, 2012). In the original model, enterprise-IS Maturity explained about 30% (R^2=0.294) of the variance for IS Contribution to Firm Performance with high path coefficient of β =0.542 and further validated in the post-hoc analysis with R^2=0.357 and β=0.592. This is consistent with the suggestions of Li et al. (1994) that the stages-of-growth model

is still relevant in evaluating the IS/IT sophistication and utilization in organizations to know the current stage and anticipate challenges for the next stages in order to appropriately resolve them. Furthermore, it supports Hollyhead and Robson's (2012) indication of the relevance and significance of the stage-of-growth model in categorizing the evolution of IT/IS in organization.

7. Conclusion

The relevant role of IT/IS in organizations has been recognized giving the impetus to shift focus from using IS as a business support tool to shaping new business strategies. As strategy sets the tone for organizational activities towards success, so does IS Strategy seek to define the organizational path for the adoption and pursuit of the enterprise IS. However, although research in the IS domain has been rife and hinging on the significance of IS Strategy, the focus has been on strategic information systems planning, strategic IS alignment and IS for competitive advantage to the neglect of the impacts of IS Strategy itself. The study set out to investigate the impact of IS Strategy on the organizational maturity with regards to IT/IS and the resultant effect on the overall firm performance. To design the research model, the study relied on the stages-of-growth perspective to relate IS Strategy to the impacts on enterprise-IS Maturity and the overall influence on the Contribution of the enterprise-IS to firm performance. Responses from senior IT executives of the Ghana Club 100 companies in Accra were collected and analyzed to test the research model. This data was analyzed using the partial least squares approach in SPSS and SmartPLS software to ascertain the support or otherwise of the hypotheses. After discussing the relevant findings of the study as it pertains to the objectives and hypotheses developed, this section gives a conclusion of the entire study.

7.1 Implications for Research

The re-conceptualized typology for IS Strategy by Chen et al. (2010) is considered a milestone in IS research presenting a unifying and progressive theory of IS Strategy as noted by Lo (2012). The study operationalized this typology by testing it on organizations in Ghana. Although research in the IS domain hinges on IS Strategy, the three dominant streams found in literature are IS planning, business-IS strategic alignment and IS for competitive advantage with neglect for IS Strategy itself. This study by empirically testing the IS typology has therefore contributed immensely to knowledge in this area of research. The study supports the typology and deems it essential to progressive research in the IS research domain. Further, Nolan's (1973) stages-of-growth model is credited as the most widely used framework for assessing and evaluating organizational evolution with regards to the utilization and management of IS/IT. It is worth noting that the model has since undergone revisions and currently comprises nine stages segmented into three eras: Data Processing, Information Technology and Network with distinctive characteristics (Van der Zee, (n.d.); Hollyhead & Robson; Nolan & Gibson, 1974; Nolan & Koot, 1992; Li *et al.,* 1994; Drury, 1984). The study sought to operationalize all nine stages of the current model using the four growth processes (Nolan & Koot, 1992) to assess and identify the level of an organization's maturity with regards to the utilization and management of IT/IS termed enterprise-IS Maturity in adopting the stages-of-growth perspective to explain the impacts of IS Strategy on the overall contribution of IS to performance. By finding empirical support for this, the study suggests that organizations should strive to attain higher levels of enterprise-IS Maturity for a resultant improved contribution of IS to firm performance. Also, careful attention should be paid to the growth process of applications portfolio, resources, and management and user awareness/skills – the cardinal points of the organizational IT/IS function.

7.2 Implications for Practice

The study reveals that to attain greater contribution of IS to the overall performance of the organization, it is imperative to adopt innovative rather than conservative or undefined approach to IS. It is noted that by consistently exploiting and responding quickly to IS opportunities, not only enhances the enterprise-IS Maturity (level of utilization and management of organizational IT/IS) but also translates into better firm performance. Organizations, in order to attain higher levels of enterprise-IS Maturity and subsequently improved firm performance should, therefore, gravitate towards defined IS strategies particularly with an innovative approach as investors are known to respond more positively to moves by organizations to invest in innovative types of IS than investments in common place industry technology and systems (Lo, 2012). It is necessary for organizations with undefined approach to IS to take cue and work towards adopting and consistently pursuing defined strategies particularly innovative strategy. This would be a first step to elevating them from the detrimental effects on enterprise-IS Maturity and the predicament of poor contribution of IS to the overall firm performance. Galliers and Sunderland (1991) as well as Premkumar and King (1994) provide good sources on guidelines for the strategic planning process in IS which would prove relevant. More so, to effectively manage the enterprise-IS, it is important to evaluate and ascertain the level of progress regarding the deployment and implementation. The stages-of-growth model provides a useful tool for organizations in this regard to effectively coordinate the deployment, use and management of the enterprise IT/IS for strategic gains. It is recommended, therefore, that

organizations undertake such enterprise-IS Maturity assessments in order to review the usage of IS in the organization and to develop appropriate strategies and techniques to properly manage the peculiar issues that arise towards improved maturity levels and ultimately greater contribution to performance.

7.3 Conclusion

Recognizing the significant role of IS in delivering business value and performance improvements, organizations are seeking more definitive approaches to the utilization and management of the enterprise-IS. This has become relevant as organizations are edging closer to the understanding of IS Strategy as the shared view of the role of IS in the organization rather than the other conceptions of IS Strategy as the use of IS to support the business strategy or as the master plan for the IT/IS function. This gives impetus to take a more holistic and comprehensive approach to IS through defined IS strategies. The decision to implore innovative or conservative strategies then lies in the organizations' shared view of IS as either a competitive drive or efficiency gains. Furthermore, IT Maturity was found to mediate between the defined IS strategies and performance (at least partially – for IS Innovator) but not for Undefined strategy. It was however noted that, in the case of IS Conservative strategy, it is the stable and consistent implementation of such strategy that yields positive association with enterprise Maturity. IS Undefined strategy was found to be detrimental to the organizations' maturity with regards to IS. It is necessary, therefore, that organizations seeking to attain higher levels of enterprise-IS Maturity and the resultant improved contribution to firm performance adopt definitive IS strategies and importantly consistently pursue and implement such strategies. The organizations reported moderate (Information Technology era) to high (Network era) levels of enterprise-IS Maturity, and it is further noted that higher levels of enterprise-IS Maturity impact more positively the extent of IS Contribution to the overall performance. However, there exists "stage disparity" where growth processes or sectors of the enterprise-IS record varying stages of maturity. This as noted, is often the case when organizations concentrate their efforts towards certain growth processes (e.g. applications portfolio) to the neglect of others (user skills and awareness). It is important, therefore, that organizations carefully adopt more definitive and holistic approaches to the utilization and management of the enterprise-IS in order to realize optimum benefits and improve the contribution of IS to the overall firm performance.

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